

What is claimed:

1. An isolated nucleic acid molecule selected from the group consisting of:

5 (a) a nucleic acid molecule comprising the nucleotide sequence set forth in SEQ ID NO:1, SEQ ID NO:4, SEQ ID NO:7, SEQ ID NO:10, or SEQ ID NO:14; and
(b) a nucleic acid molecule comprising the nucleotide sequence set forth in SEQ ID NO:3, SEQ ID NO:6, SEQ ID NO:9, SEQ ID NO:12, or SEQ ID NO:16.

10 2. An isolated nucleic acid molecule which encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, or SEQ ID NO:15.

15 3. An isolated nucleic acid molecule comprising the nucleotide sequence contained in the plasmid deposited with ATCC® as Accession Number _____, PTA-1845, _____, _____, or _____.

20 4. An isolated nucleic acid molecule which encodes a naturally occurring allelic variant of a polypeptide comprising the amino acid sequence set forth in SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, or SEQ ID NO:15.

5. An isolated nucleic acid molecule selected from the group consisting of:

25 a) a nucleic acid molecule comprising a nucleotide sequence which is at least 60% identical to the nucleotide sequence of SEQ ID NO:1 or 3, SEQ ID NO:4 or 6, SEQ ID NO:7 or 9, SEQ ID NO:10 or 12, or SEQ ID NO:14 or 16, or a complement thereof;

30 b) a nucleic acid molecule comprising a fragment of at least 50 nucleotides of a nucleic acid comprising the nucleotide sequence of SEQ ID NO:1 or 3, SEQ ID NO:4 or 6, SEQ ID NO:7 or 9, SEQ ID NO:10 or 12, or SEQ ID NO:14 or 16, or a complement thereof;

35 c) a nucleic acid molecule which encodes a polypeptide comprising an amino acid sequence at least about 60% identical to the amino acid sequence of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, or SEQ ID NO:15; and

d) a nucleic acid molecule which encodes a fragment of a polypeptide comprising the amino acid sequence of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, or SEQ ID NO:15, wherein the fragment comprises at least 16 contiguous amino

acid residues of the amino acid sequence of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, or SEQ ID NO:15.

6. An isolated nucleic acid molecule which hybridizes to the nucleic acid

5 molecule of any one of claims 1, 2, 3, 4, or 5 under stringent conditions.

7. An isolated nucleic acid molecule comprising a nucleotide sequence which is complementary to the nucleotide sequence of the nucleic acid molecule of any one of claims 1, 2, 3, 4, or 5.

10 8. An isolated nucleic acid molecule comprising the nucleic acid molecule of any one of claims 1, 2, 3, 4, or 5, and a nucleotide sequence encoding a heterologous polypeptide.

15 9. A vector comprising the nucleic acid molecule of any one of claims 1, 2, 3, 4, or 5.

10. The vector of claim 9, which is an expression vector.

20 11. A host cell transfected with the expression vector of claim 10.

12. A method of producing a polypeptide comprising culturing the host cell of claim 11 in an appropriate culture medium to, thereby, produce the polypeptide.

25 13. An isolated polypeptide selected from the group consisting of:

30 a) a fragment of a polypeptide comprising the amino acid sequence of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, or SEQ ID NO:15, wherein the fragment comprises at least 16 contiguous amino acids of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, or SEQ ID NO:15;

35 b) a naturally occurring allelic variant of a polypeptide comprising the amino acid sequence of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, or SEQ ID NO:15, wherein the polypeptide is encoded by a nucleic acid molecule which hybridizes to a complement of a nucleic acid molecule consisting of SEQ ID NO:1 or 3, SEQ ID NO:4 or 6, SEQ ID NO:7 or 9, SEQ ID NO:10 or 12, or SEQ ID NO:14 or 16 under stringent conditions;

40 c) a polypeptide which is encoded by a nucleic acid molecule comprising a nucleotide sequence which is at least 60% identical to a nucleic acid

comprising the nucleotide sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, or SEQ ID NO:16;

5 d) a polypeptide comprising an amino acid sequence which is at least 60% identical to the amino acid sequence of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, or SEQ ID NO:15.

10 14. The isolated polypeptide of claim 13 comprising the amino acid sequence of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, or SEQ ID NO:11.

15 15. The polypeptide of claim 13, further comprising heterologous amino acid sequences.

16. An antibody which selectively binds to a polypeptide of claim 13.

17. A method for detecting the presence of a polypeptide of claim 13 in a sample comprising:

a) contacting the sample with a compound which selectively binds to the polypeptide; and
20 b) determining whether the compound binds to the polypeptide in the sample to thereby detect the presence of a polypeptide of claim 13 in the sample.

25 18. The method of claim 17, wherein the compound which binds to the polypeptide is an antibody.

19. A kit comprising a compound which selectively binds to a polypeptide of claim 13 and instructions for use.

20. A method for detecting the presence of a nucleic acid molecule of any one of 30 claims 1, 2, 3, 4, or 5 in a sample comprising:

a) contacting the sample with a nucleic acid probe or primer which selectively hybridizes to the nucleic acid molecule; and
35 b) determining whether the nucleic acid probe or primer binds to a nucleic acid molecule in the sample to thereby detect the presence of a nucleic acid molecule of any one of claims 1, 2, 3, 4, or 5 in the sample.

21. The method of claim 20, wherein the sample comprises mRNA molecules and is contacted with a nucleic acid probe.

22. A kit comprising a compound which selectively hybridizes to a nucleic acid molecule of any one of claims 1, 2, 3, 4, or 5 and instructions for use.

5 23. A method for identifying a compound which binds to a polypeptide of claim 13 comprising:

- a) contacting the polypeptide, or a cell expressing the polypeptide with a test compound; and
- b) determining whether the polypeptide binds to the test compound.

10 24. The method of claim 23, wherein the binding of the test compound to the polypeptide is detected by a method selected from the group consisting of:

- a) detection of binding by direct detection of test compound/polypeptide binding;
- b) detection of binding using a competition binding assay; and
- c) detection of binding using an assay for DHDR activity.

15 25. A method for modulating the activity of a polypeptide of claim 13 comprising contacting the polypeptide or a cell expressing the polypeptide with a compound 20 which binds to the polypeptide in a sufficient concentration to modulate the activity of the polypeptide.

26. A method for identifying a compound which modulates the activity of a polypeptide of claim 13 comprising:

- a) contacting a polypeptide of claim 13 with a test compound; and
- b) determining the effect of the test compound on the activity of the polypeptide to thereby identify a compound which modulates the activity of the polypeptide.

27. The method of claim 26, wherein said activity is modulation of virus activity.

30 28. A method for identifying a compound which modulates virus activity comprising:

- a) contacting the polypeptide of claim 13, or a cell expressing the polypeptide with a test compound; and
- b) identifying the compound as a modulator of virus activity by determining the effect of the test compound on the activity of the polypeptide.

29. A method for treating a subject having a viral disorder comprising administering to the subject a DHDR modulator, thereby treating said subject having a viral disorder.

5 30. A method for treating a subject having viral disorder comprising administering to the subject a DHDR modulator, wherein the DHDR modulator is the modulator identified by the method of claim 26, thereby treating said subject having a viral disorder.

10 31. The method of claim 29, wherein the DHDR modulator is a small molecule.

32. The method of claim 29, wherein the DHDR modulator is administered in a pharmaceutically acceptable formulation.

15 33. The method of claim 29, wherein the DHDR modulator is administered using a gene therapy vector.

34. The method of claim 29, wherein the DHDR modulator is capable of modulating DHDR polypeptide activity.

20 35. The method of claim 26, wherein said activity is modulation of cellular proliferation.

25 36. A method for identifying a compound which modulates cellular proliferation comprising:
a) contacting the polypeptide of claim 13, or a cell expressing the polypeptide with a test compound; and
b) identifying the compound as a modulator of cellular proliferation by determining the effect of the test compound on the activity of the polypeptide.

30 37. A method for treating a subject having a cellular proliferation disorder comprising administering to the subject a DHDR modulator, thereby treating said subject having a cellular proliferation disorder.

35 38. A method for treating a subject having cellular proliferation disorder comprising administering to the subject a DHDR modulator, wherein the DHDR modulator is the modulator identified by the method of claim 26, thereby treating said subject having a cellular proliferation disorder.

39. The method of claim 37, wherein the DHDR modulator is a small molecule.

40. The method of claim 37, wherein the DHDR modulator is administered in a
5 pharmaceutically acceptable formulation.

41. The method of claim 37, wherein the DHDR modulator is administered using
a gene therapy vector.

10 42. The method of 37, wherein the DHDR modulator is capable of modulating
DHDR polypeptide activity.